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L1: Entry 4 of 4

File: USPT

Jul 24, 2001

US-PAT-NO: 6265202DOCUMENT-IDENTIFIER: US 6265202 B1

TITLE: DNA encoding methymycin and pikromycin

DATE-ISSUED: July 24, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Sherman; David H.	St. Louis Park	MN		
Liu; Hung-Wen	Roseville	MN		
Xue; Yongquan	St. Paul	MN		
Zhao; Lishan	St. Paul	MN		

US-CL-CURRENT: 435/252.31; 435/183, 435/252.3, 435/252.33, 435/320.1, 536/23.1,
536/23.2, 536/23.7

CLAIMS:

What is claimed is:

1. An isolated and purified nucleic acid segment comprising a nucleic acid sequence encoding at least one desosamine biosynthetic polypeptide, wherein the nucleic acid sequence encodes DesI (SEQ ID NO:8), DesII (SEQ ID NO:10), DesIII (SEQ ID NO:12), DesIV (SEQ ID NO:14), DesV (SEQ ID NO:16), DesVI (SEQ ID NO:18), DesVII (SEQ ID NO:20), DesVIII (SEQ ID NO:22), or a fragment thereof which catalyzes a step in desosamine biosynthesis selected from the group consisting of 4-dehydrase, reductase, TDP-glucose synthase, TDP-glucose-4,6-dehydratase, aminotransferase, N-methyltransferase, glycosyltransferase and tautomerase.

2. The isolated and purified nucleic acid segment of claim 1 comprising SEQ ID NO:3.

3. An isolated and purified nucleic acid segment which comprises a nucleic acid sequence encoding DesI (SEQ ID NO:8), DesII (SEQ ID NO:10), DesIII (SEQ ID NO:12), DesIV (SEQ ID NO:14), DesV (SEQ ID NO:16), DesVI (SEQ ID NO:18), DesVII (SEQ ID NO:20), DesVIII (SEQ ID NO:22) or DesR (SEQ ID NO:24), or a fragment of DesR which has glucosidase activity.

4. The isolated and purified nucleic acid segment of claim 1 which is from *Streptomyces venezuelae*.

5. An expression cassette comprising the nucleic acid segment of claim 1 or 3 operably linked to a promoter functional in a host cell.

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536/23.2, 536/23.7

ABSTRACT:

A novel pathway for the synthesis of polyhydroxyalkanoates is provided. A method of synthesizing a recombinant polyhydroxyalkanoate monomer synthase is also provided. These recombinant polyhydroxyalkanoate synthases are derived from multifunctional fatty acid synthases or polyketide synthases and generate hydroxyacyl acids capable of polymerization by a polyhydroxyalkanoate synthase. Also provided is a biosynthetic gene cluster for methymycin and pikomycin as well as a biosynthetic gene cluster for desosamine.

8 Claims, 160 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 158

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